

faces of the electrodes, this shape and the spacing of the gas passages providing a substantially uniform distribution of electric field occurs across the plasma volume space between the electrodes.

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29. A reactor according to claim 28, wherein the electrodes are embedded in a body of dielectric material which extends across the space between the electrodes and includes a plurality of gas passages extending longitudinally of the body of dielectric material to provide a plurality of electrically equivalent plasma volumes extending in series across the space between the electrodes.

30. A reactor according to claim 28, wherein the dielectric material is selected from the group consisting of alpha or gamma aluminas, cordierite, mullite, alumino silicate ceramics, silicon carbide, micaceous glass or mixtures of these.

31. A reactor according to claim 28 wherein the gas passages have surfaces which present a catalytically active surface to gaseous medium passing through them.

32. A reactor according to claim 31, wherein the said surfaces of the gas passages are coated, impregnated or treated by ion-exchange or doping, with a catalytically-active material.

33. A reactor according to claim 28, wherein the catalytically active surface is catalytically active towards the reduction of the emissions of one or more of nitrogenous oxides, particulate including carbonaceous particulate, hydrocarbons including polyaromatic hydrocarbons, carbon monoxide and other regulated or unregulated combustion products from the exhausts of internal combustion engines.

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34. A reactor according to claim 31, wherein the catalytically-active material is selected from the group consisting of alpha and gamma aluminas and mixtures of these phases, ferroelectric materials including of titanates, including barium titanate, titania, including anatase phase titania, zirconia, vanadia, silver aluminate, perovskites including layered perovskites and La_2CuO_4 , $\text{La}_{1.9}\text{K}_{0.1}\text{Cu}_{0.95}\text{V}_{0.05}\text{O}_4$ and $\text{La}_{0.9}\text{K}_{0.1}\text{CoO}_3$, spinels, metal-doped and metal oxide-doped or exchanges inorganic oxides including cobalt oxide-doped or exchanged inorganic oxides including cobalt oxide-doped alumina, vanadates including potassium metavanadate, caesium metavanadate, pyrovanadates including potassium pyrovanadate and caesium pyrovanadate, metal-doped zeolites including zeolites known as ZSM-5, Y, beta, mordenite all of which zeolites may contain iron, cobalt or copper with or without additional catalyst promoting cations including cerium and lanthanum, alkali metal containing zeolites in particular sodium-Y zeolites and mixtures of any of these materials.

35. A reactor according to claim 28, wherein the gas passages contain a gas permeable body of an insulating filling material.

36. A reactor according to claim 35, wherein the insulating filling material comprises a dielectric material.

37. A reactor according to claim 36, wherein the dielectric material is a catalytically active material.

38. A reactor according to claim 36, wherein the dielectric material is coated, impregnated or otherwise treated with a catalytically active material.

39. A reactor according to claim 36, wherein the dielectric material develops catalytically active properties by

virtue of exposure to plasma in the gas passages.

40. A reactor according to claim 28, wherein the electrodes are planar and the gas passages have a generally rectangular cross section with their major transverse dimensions parallel to those of the said facing surfaces of the electrodes.

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41. A reactor according to claim 28, wherein the electrodes are in the form of two concentric cylinders and the gas passages comprise a plurality of regularly spaced slots of cylindrical form.

42. A reactor according to claim 28, wherein the arrangement of gas passages is such that the potential drop across the plasma volume between the electrodes is equal to approximately half the voltage applied to the reactor.

43. A reactor according to claim 28, wherein power supply for the reactor is provided by an integrated starter alternator damper system.

44. A reactor according to claim 28, wherein electrical-generating power supply for the reactor is provided at least partially from the group comprising fuel cells, gas turbines, solar cells and heat exchangers.

45. A reactor according to claim 28 incorporated as part of an emissions control system.

46. A reactor according to claim 45, wherein the emissions control system is used in conjunction with an engine management system.

47. A reactor according to claim 45, wherein the emis-